



# Pear Decline

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Since about 1948 a serious disease known as pear decline has afflicted pear trees in the Pacific Northwest. The disorder apparently started in British Columbia and moved southward through Washington, Oregon, and northern California.

Trees with pear decline may gradually lose vigor, become unproductive, and die after several years (slow decline), or they may suddenly wilt and die during the summer season (quick decline). Both forms of decline appear to be different manifestations of the same disease.

## Cause of Decline

Such factors as soil organisms, soil moisture, fertilizer practice, pesticide sprays, and winter injury do not appear to cause decline. Evidence indicates that decline is a bud union disease associated with certain root-top combinations. Affected trees show a degeneration of living bark tissue near the bud union. This condition apparently prevents movement of organic food material to roots, causing death or weakening of roots, which in turn prevents normal functioning of tops. Quick decline results from foliage wilt during hot periods when the weakened root system cannot supply the leaves with adequate moisture.

There are many reasons why trees are low in vigor and unproductive. Some trees may appear to have decline when they do not. The only sure way of determining if a tree has decline is to examine microscopically bark tissue from the bud union. Some trees with decline will show a distinct brown line on bark tissue removed from the bud union, but others may have the disorder and not show a brown line.

Recent evidence from Washington State indicates that decline is caused by a toxin injected into pear trees by the pear psylla insect. The toxin moves down the trunk in the living bark tissues and causes injury in rootstock tissue just below the bud union. Thus, growers should attempt to get good psylla control through-

out the season. If the trees are on highly susceptible rootstocks, however, normal psylla control will not prevent decline.

## Rootstocks

Trees propagated on the oriental rootstocks *Pyrus serotina* and *Pyrus ussuriensis* are the most susceptible to pear decline. Some trees on French seedling roots may be susceptible also, but many are satisfactory. Seedlings of Bartlett and Winter Nelis are generally satisfactory, although a small percentage may get decline. Any tree that is well scion-rooted above the bud union will not be affected with decline. Also, trees with blight resistant trunkstocks of Old Home in which the Old Home trunk has scion-rooted are immune to decline. Old Home is susceptible to both crown rot and lilac blight (*Pseudomonas syringae*), so these diseases may be a problem while the trees are young.

## Recommendations

1. Pull all trees with pear decline if they no longer produce profitably.
2. Trees can be replanted in the same location where old trees were removed, but virgin soil should be placed around the new tree to reduce injury from arsenic residues in the old soil.
3. Trees should be propagated on one of the following rootstocks:
  - Scion-rooted Old Home.
  - Domestic French (Bartlett or Winter Nelis) seedlings. Old Home trunks on these types will give additional protection against decline.
  - Blight resistant French seedlings (such as Old Home x Farmingdale).
  - Old Home trunks on Quince A or French seedling roots planted with the bud union 2 inches below ground to induce scion rooting of the Old Home stem.



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